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# FOOD TRANSPORT CONTAINER

Rieber Weke, Heinrich Rieber KG

UNITED STATES PATENT AND TRADEMARK OFFICE
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# FOOD TRANSPORT CONTAINER

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| Inventors: | Requested anonymity |
| Applicants: | Rieber Werke, Heinrich Rieber KG |

## Claims

1. Food transport container with a heat-insulating outer container and with at least one serving dish installed in the container, said dish is of double-wall design and forms a sealed hollow cavity which is filled with a heat-storage medium, which is solid at room temperature and which is liquefied before transport due to addition of heat, characterized in that a hot-melt adhesive is used as the heat storage medium.

2. Food transport container according to Claim 1, characterized in that a mixed ethylene phenylacetate copolymer is used as the hot melt adhesive.

## Description

The invention pertains to a food transport container according to the main clause of Claim 1. Transport containers of this kind are known. They have the advantage that foods located in the serving dish are protected against the loss of heat not only by the insulating outer container, but also by an additional heat storage medium which has a temperature of about 80°C, so that they can be kept warm longer.

As the heat storage medium, heretofore paraffin has been used, or a salt solution that crystallizes at room temperature. The disadvantage of these media is that at a temperature of

about 90 or 95°C, they experience a change in volume which can result in buckling of the serving dish. An additional disadvantage of the known designs is that due to the use of these heat storage media, they offer no protection against accidental overheating, which may occur for example, during subsequent heating of the delivered foods in a household baking oven. Temperatures above 150 to 200°C result in a deformation of the serving dish caused by the change in volume of the heat storage medium and this deformation is permanent.

The [present] invention is based on the problem of designing a food transport container of the kind described above which will not be subject to the specified adverse characteristics.

To solve this problem, the invention provides that as heat storage medium, a hot-melt adhesive is used which is solid at room temperature, similar to paraffin or salt solution, which absorbs the melting heat at temperatures of about 80 to 90°C and stores it in the liquid state. Furthermore, the hot-melt adhesive is tailored so that its physical properties will not change in case of an accidental temperature increase up to about 200°C and will return to a solid state upon cooling back down to room temperature. For this purpose, an ethylene-phenylacetate mixed copolymer has proven particularly suitable.

The invention is illustrated in the figures, based on one design example, and will be explained in greater detail below. We have:

Figure 1 A perspective view of a new food transport container, in the closed state,

Figure 2 The lower half of the food transport container with the installed serving dish,

Figure 3 A cross section through the lower part of the outer container along the line III-III in Figure 2, with the installed, but not cut, serving dish,

Figure 4 A top view of a part of the serving dish visible in Figure 2, and

Figure 5 A partial cross section through the serving dish of Figure 4 along the line V-V.

In Figures 1 to 3 we see a food transport container (1) which consists of a lower part (2) and a cover part (3) with clasp (4). The upper part and lower part are joined together in a known manner in the transport setting by spring clamps (5) located on the side.

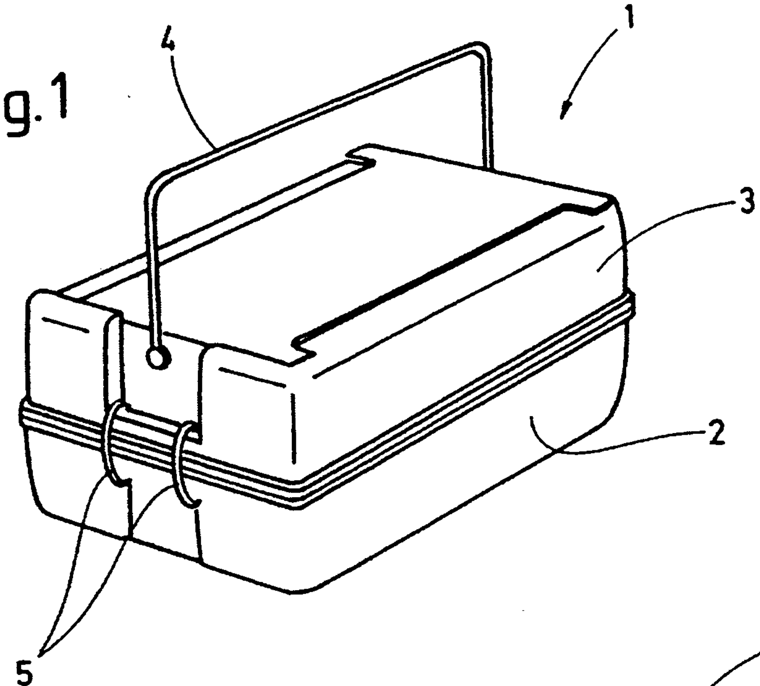
Figures 2 and 3 show that in the lower part (2) of the heat insulated outer container there is a serving dish (6) installed, and that the lower part (2) of the heat insulating container—like the upper part (3)—is of double wall design, so that the lower part (2) forms a cavity (7) surrounding the serving dish (6), which can remain as an insulating cavity or can also be filled with heat insulating material, for example, it can be filled with a foamed plastic.

In order to increase the heat storage capacity of the serving dish (6) and of the food (not shown in the illustration) contained therein, the serving dish (6) itself is likewise of a double wall design, as is indicated quite clearly in Figure 5, so that below the bulges (8, 9, 10) provided for

the foods, and partly also between them, a hollow cavity is created which is filled entirely with a hot-melt adhesive (11). This hot-melt adhesive, which can be, for instance, a mixed copolymer of ethylene-phenylacetate, is solid at room temperature and it melts at temperatures on the order of 80°C. In this case, sufficient heat must be supplied in order to provide the heat of melting. The entire amount of supplied heat is used as a heat reservoir to keep warm the foods held in the bulges (8, 9 or 10).

The hot-melt adhesive (11) has the property that it will change its volume very little, if at all, at temperatures up to 150 or 200°C, when heat is applied in order to liquefy the polymer as the temperature increases up to more than 90°C. During the subsequent cooling to room temperature, the hot-melt adhesive (11) solidifies again. Now surprisingly, these properties make hot-melt adhesives particularly well-suited as heat storage media in hollow cavities which are tightly sealed on all sides, such as those that are present in the serving dish (6) of the illustrated food transport container. Any undesirable deformation or bursting of the serving dish (6) will thus be prevented. The serving dish (6) with the hot-melt adhesive as heat storage medium thus does not represent any safety hazard if it is left accidentally in a hot baking oven or is set onto a hot cooking burner to reheat the food, for example, in a household. In addition, hot-melt adhesives of this kind do not tend to form vapors even at higher temperatures, nor do they form explosive and easily ignited vapors. For these reasons as well, they are particularly advantageous for the purpose of this invention.

Fig. 1



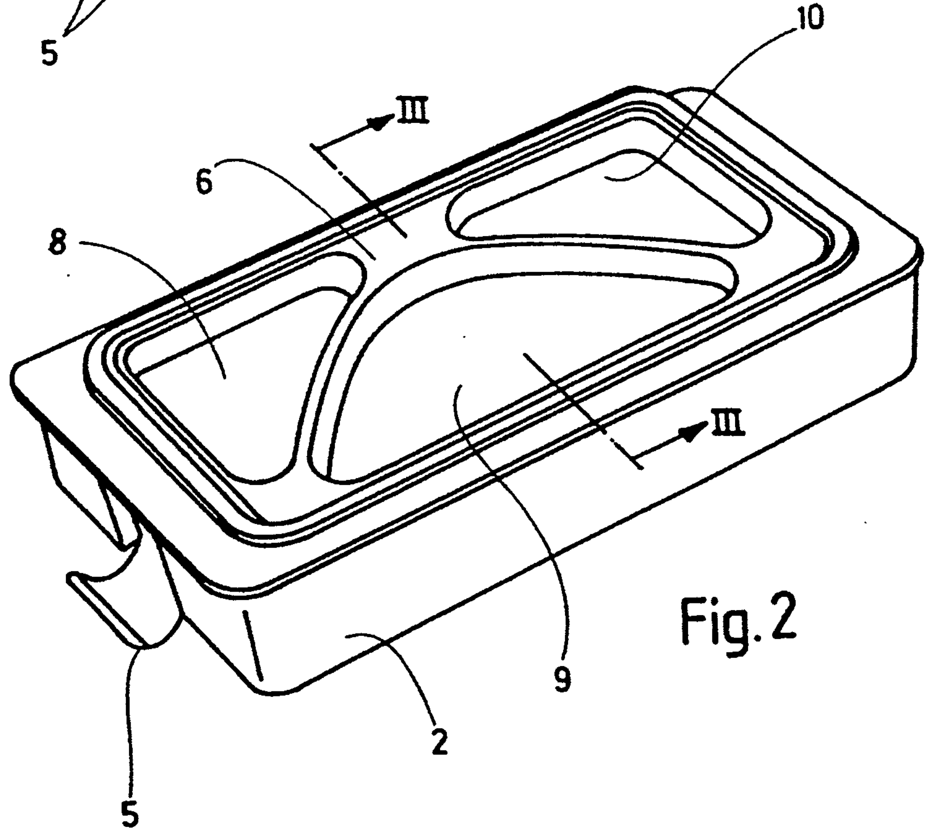
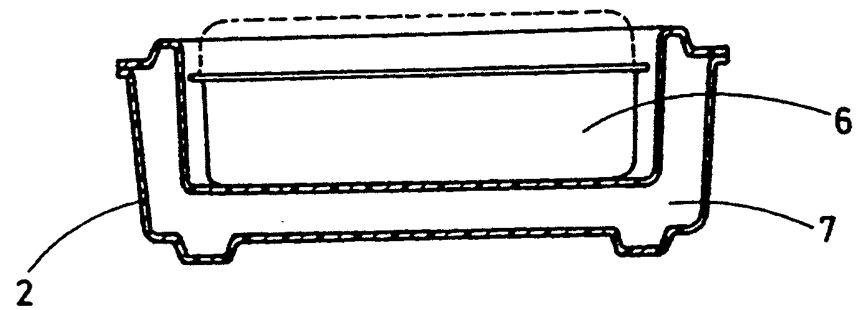




Fig. 2

Fig. 3



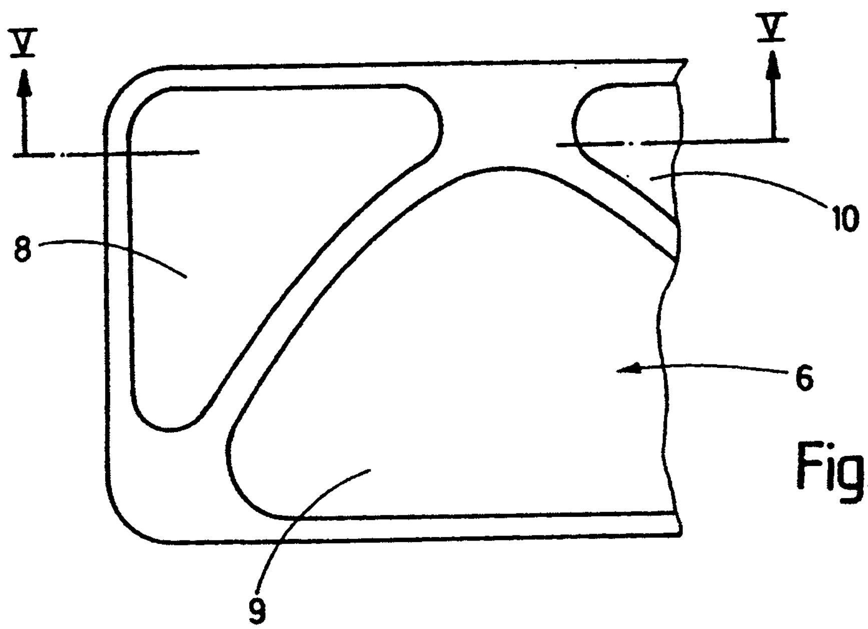




Fig. 4

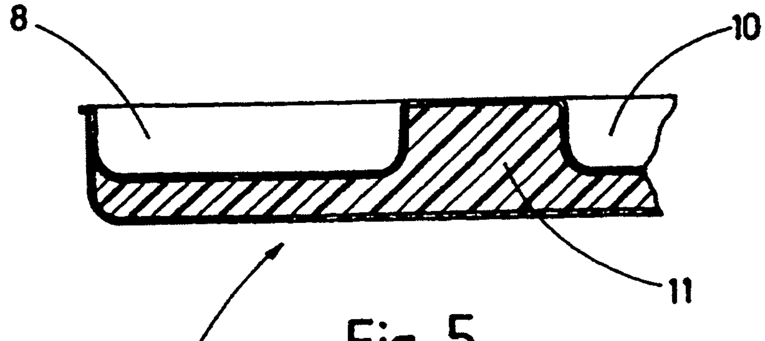



Fig. 5